

**FINAL**

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**Public Involvement and Response Plan  
during  
Installation Restoration Program Activities  
at RSA-49**

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**Redstone Arsenal, Alabama**  
**EPA ID : AL2 210 020 742**

**November 30, 1994**

**FINAL**  
**PUBLIC INVOLVEMENT AND RESPONSE PLAN**  
**DURING INSTALLATION RESTORATION ACTIVITIES**  
**AT RSA-49**

**REDSTONE ARSENAL, ALABAMA**  
**EPA ID: AL2 210**

**NOVEMBER 30, 1994**

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## SECTION 1.0 INTRODUCTION

Redstone Arsenal (RSA), in Madison County, Alabama, is evaluating past waste management practices at its facility under the Defense Environmental Restoration Program (DERP).

These studies are currently being performed in accordance with the requirements of the Resource Conservation and Recovery Act of 1976, and Amendments (RCRA), with oversight by the U.S. Environmental Protection Agency (EPA) and the Alabama Department of Environmental Management (ADEM). RCRA requires corrective action at any solid waste management unit (SWMU) which is releasing hazardous constituents to the environment. One SWMU (RSA 49) was identified at the former arsenic ponds at Redstone Arsenal, during a RCRA Facility Assessment (RFA).

The U.S. Army Missile Command (MICOM) Environmental Management Office of Redstone Arsenal has tasked the U.S. Army Corps of Engineers (USACE) Huntsville Division to further investigate the RSA-49 site. The RCRA Facility Investigation (RFI) has been completed and a corrective measure study (CMS) is in progress. The USACE Savannah District has been tasked to conduct an Interim Remedial Action (IRA) at RSA-49. This project involves the design and construction of an Interim Corrective Measure (ICM) to mitigate groundwater contamination.

The objective of this Public Involvement and Response Plan (PIRP) is to describe the needs and opportunities for public involvement and the associated activities which will be implemented during the performance of the installation restoration projects taking place at RSA-49. Redstone Arsenal was included on the Federal Facility's portion of the U.S. EPA's National Priorities List (NPL) on May 31, 1994. While EPA is not the lead agency at a Federal facility site, an interagency agreement (IAG) has been negotiated for determining coordination of the Army, EPA and ADEM roles. Community relations and technical activities currently being performed at Redstone Arsenal will comply with the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended.

For the reader's convenience, a fold-out listing of abbreviations and acronyms is provided at the end of this document.

## 1.1 PLAN PURPOSE

This PIRP supplements the Installation Community Relations Program (CRP) developed for the Army activities which are performed under the Defense Environmental Restoration Program (DERP) at Redstone Arsenal. The PIRP addresses the implementation of those community relations activities which are considered appropriate for a specific site, area or collection of sites. The Installation CRP identifies the MICOM Public Affairs Office at Redstone Arsenal as responsible for implementing the program and presents the contacts and resources established by Redstone Arsenal for use during IRP activities under DERP.

The PIRP is not intended to be an independent document. It is to be used in combination with the established Installation CRP. These two documents provide a comprehensive information and participation program and the specific plan for an effective community participation program during RSA-49 IRP activities. This PIRP identifies the techniques for addressing the public's information needs and public involvement in the decision-making process at RSA-49 by referring to appropriate CRP activities.

The PIRP is designed to establish an effective communications link among the responsible USACE and Redstone Arsenal personnel, and any affected on-post and off-post communities relevant to RSA-49. To provide these communities with opportunities to respond to current and accurate information, the plan at RSA-49 is structured around the following goals:

- To identify a single point of contact at Redstone Arsenal in order to ensure a consistent source of factual data and consolidation of RSA-49 updates.
- To inform the affected and interested communities about the IRP process of DERP in general and specifically how it relates to the RSA-49 site and the surrounding community.
- To inform the community about activities that have been and are expected to be conducted at the RSA-49 site as well as the schedule for planned activities.

- To address any concerns raised by the community and discuss with the community the data collected from RSA-49 investigations, feasibility studies and other applicable studies.
- To disseminate information to the State of Alabama, Madison County, and other local and federal officials regarding the activities conducted at RSA-49.
- To maintain open communications with appropriate government personnel and community representatives so that they may better inform their constituents.

## 1.2 PIRP ORGANIZATION

This PIRP provides the following overview:

- Site Background,
- Community Profile and Key Issues of Concern, and
- Public Involvement and Response Plan (Activities and Schedule).

This PIRP is based on documents provided by the USACE, interviews with MICOM Public Affairs and Environmental Management Office representatives, and telephone interviews with Installation representatives for adjacent property users.

In order to gain an understanding of the community perceptions regarding environmental restoration at Redstone Arsenal, initial contacts were made with local and state officials for the development of the installation CRP. These contacts were used to identify appropriate agencies, members of the public and other interested parties. Initial listings of public contacts, potentially interested parties, and news media contacts and resources are included as appendices to the Installation CRP. The listings will be expanded with the aid of public notices which provide for the addition of names to the mailing list. No private citizens have been contacted at this time.

### 1.3 POINTS OF CONTACT

Ms. Pamela Rogers, MICOM Public Affairs Specialist at Redstone Arsenal, oversees and is the point of contact for all community relations and media relations activities at the RSA-49 site. These PIRP activities are coordinated with Mr. Pat Robins, Chief, USACE Mobile District Public Affairs Office, and the appropriate USACE district Public Affairs Office. Redstone Arsenal technical representation is provided as needed through Mr. Bill Schroder, MICOM Environmental Management Office at Redstone Arsenal. Mr. Schroder is the environmental point of contact for all IRP sites at Redstone Arsenal.

The USACE Savannah District has assumed lead responsibility for all technical activities regarding the ICM design at RSA-49. The USACE Huntsville Division has lead responsibility for technical activities during the Feasibility Study (FS) phase. All IRP technical activities are coordinated and managed by the Mobile District Technical Manager.

Contractors at the site do not have authority to provide information to the public. All questions or concerns regarding RSA-49 site conditions are to be referred to Ms. Pamela Rogers. Requests for information concerning the RSA-49 activities and contracts will be coordinated by Ms. Rogers with the appropriate Army technical representatives identified in Appendix A.

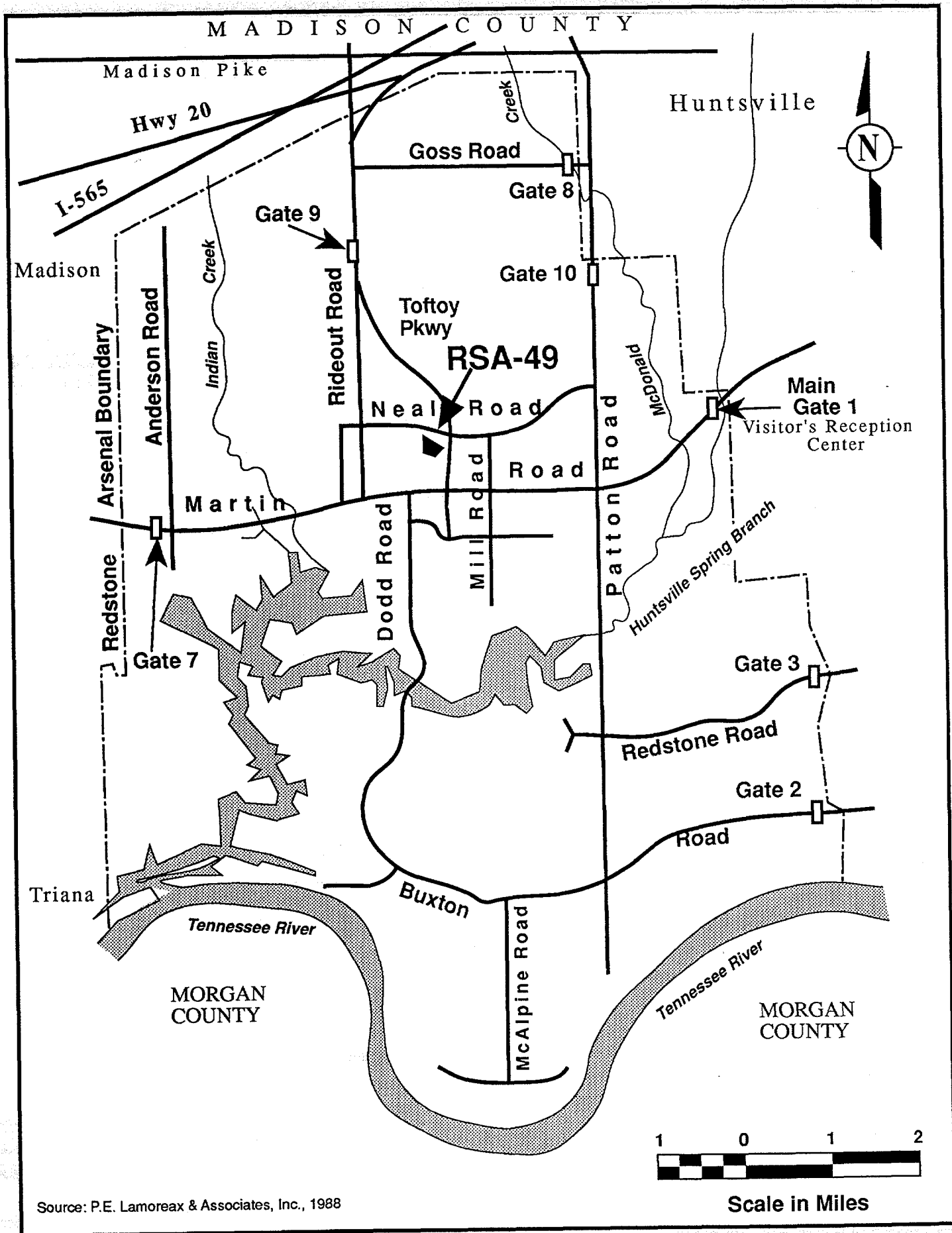
## SECTION 2.0 SITE BACKGROUND

### 2.1 SITE LOCATION AND DESCRIPTION

RSA-49 is just one of eight closed and abandoned non-contiguous SWMU sites which are collectively known as Unit 3. RSA-49 is the former closed arsenic ponds known as SWMU RSA-49 identified by EPA in the RCRA Facility Assessment. Exhibit 1 shows the location of RSA-49 in central Redstone Arsenal at the southwest corner of the intersection of Toftoy Parkway and Neal Road. The site is shown on Exhibit 2 as north of the former Lewisite Manufacturing Plant area on Digney Road (Echo Street no longer exists.) Lewisite is a chemical warfare agent containing arsenic which was manufactured in four plants located in the central part of Redstone Arsenal in 1942 and 1943. Arsenic-containing wastes generated from the Lewisite manufacturing process were disposed of in shallow ponds at RSA, including RSA-49.

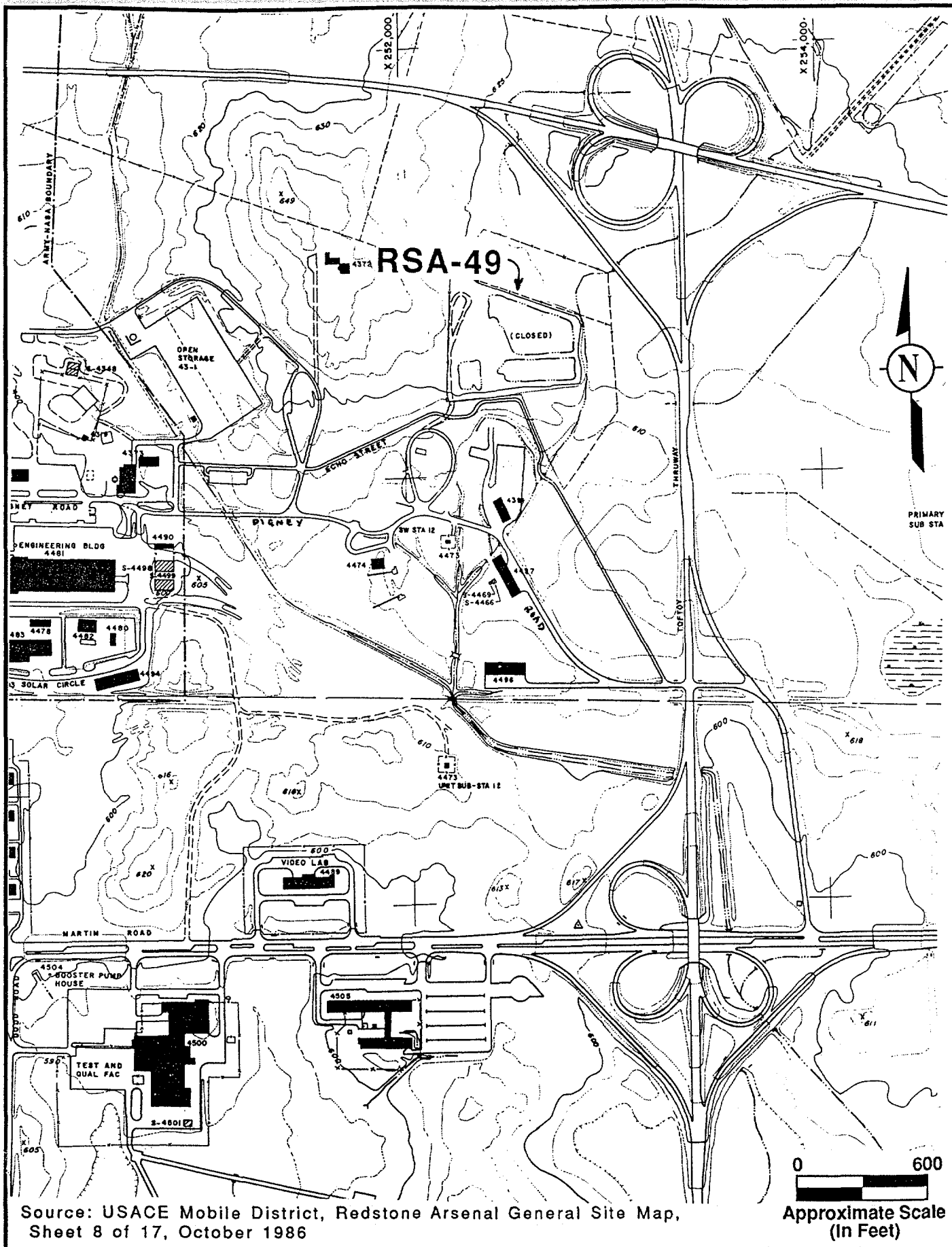
Exhibit 3 presents a detailed drawing of the RSA-49 site. RSA-49 is approximately five acres in size and consists of three ponds which were used in the 1940's to dispose of arsenic-contaminated wastes from the Lewisite manufacturing operations. Rubble and industrial wastes were disposed in the impoundments subsequent to the disposal of arsenic wastes. The ponds were closed and covered in 1977 and planted with grass and pine trees. The site is surrounded by a deteriorated fence with warning signs posted. Arsenic has been encountered in the groundwater at concentrations of approximately 110 parts per billion. Mercury and volatile organic compounds in the groundwater also exceeded cleanup levels. Polynuclear aromatic hydrocarbons (PAHs) and arsenic were also found in the soil and wastes at the site.

An existing drainage ditch crosses through the fenced RSA-49. The ditch at RSA-49 is normally a dry surface drainage ditch which extends approximately 2.2 miles before draining into the Huntsville Spring Branch of the Wheeler Reservoir. The Huntsville Spring Branch joins Indian Creek approximately 2.8 miles downstream. Indian Creek leaves the installation 4.6 miles later where it enters the town boundaries of Triana before it converges with the Tennessee River.



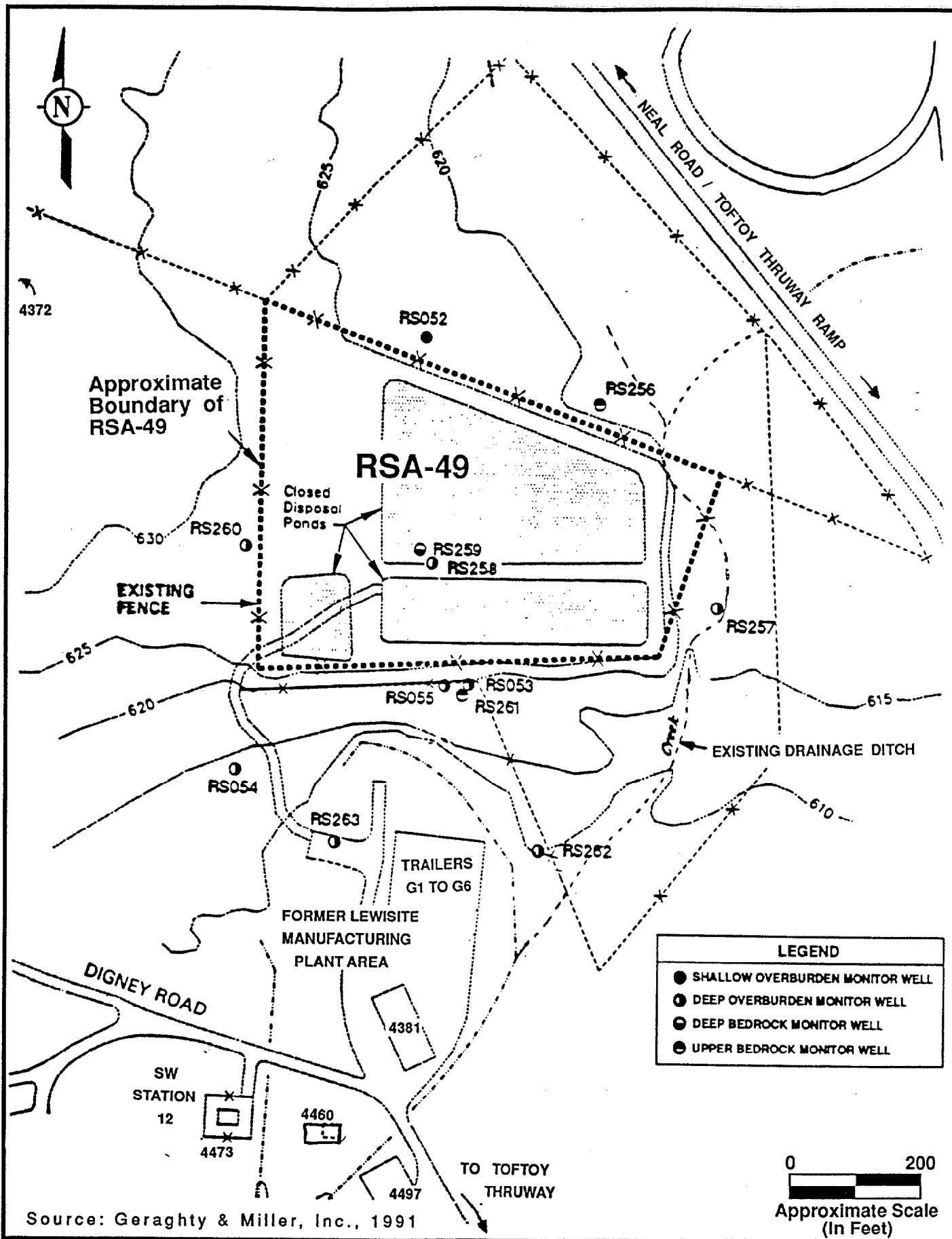
**EXHIBIT 1 GENERAL LOCATION OF RSA-49  
REDSTONE ARSENAL, ALABAMA**

0321/Final PIRP  
November 30, 1994



## EXHIBIT 2 DETAIL OF AREA SURROUNDING RSA-49 REDSTONE ARSENAL, ALABAMA

0321/Final PIRP  
November 30, 1994



**EXHIBIT 3 RSA-49 - CLOSED ARSENIC PONDS  
REDSTONE ARSENAL, ALABAMA**

0321/Final PIRP  
November 30, 1994



## 2.2 REGULATORY HISTORY AND PREVIOUS STUDIES

In January 1986, Redstone Arsenal received a Notice of Violation (NOV) from the state regulators (ADEM) following an inspection in June 1985 which included the RSA-49 site.

In response to the NOV, Redstone Arsenal investigated the potential for the migration of contaminants resulting from disposal operations at RSA-49, and evaluated remedial alternatives. The USACE Huntsville Division, acting on behalf of Redstone Arsenal, contracted P. E. Lamoreaux and Associates (PELA) to perform an RFI-type study at RSA-49 and several other Redstone Arsenal SWMUs. PELA redeveloped four existing monitoring wells, collected and analyzed groundwater samples, performed in-situ permeability tests and collected and analyzed four soil samples. The results of the study are contained in the reports "Confirmation Report, Unit 3 Investigations, Redstone Arsenal, Alabama" (PELA 1988) and "Upgrade Confirmation Report and Assessment of Remedial Alternatives for Selected Unit 3 Sites, Redstone Arsenal, Alabama" (PELA 1989).

In the previous investigation (PELA 1988), arsenic was detected in December 1987 in groundwater samples collected from all four wells in RSA-49. Concentrations of arsenic exceeding maximum concentration limits (MCLs) for Primary Drinking Water Standards (0.05 ppm) were detected only in the two well samples closest to the impoundments. Concentrations of arsenic in all samples collected in 1987 were considerably higher than reported in results of analyses of groundwater samples collected in 1980 by the U.S. Army Environmental Hygiene Agency (USAEHA). Collected data indicated that the impoundments may be releasing arsenic into the Tusculumbia Limestone Aquifer. Results of analyses of sediments from the bottom of the closed impoundments indicated that high concentrations of arsenic were present in the sediment. Additional studies were recommended to determine if the impoundments present a threat to groundwater resources in the area.

In September 1989, USACE Huntsville Division contracted Geraghty & Miller (G&M) to perform an RFI at RSA-49. The purpose of the RSA-49 RFI was to assess the potential for migration at RSA-49 to the surrounding environment. The RFI was conducted in two phases. Results of the Phase I RFI are contained in the 1991 report "Phase I Report, RCRA

Facility Investigation at Unit 1, Area F, and Selected Unit 3 Areas, Redstone Arsenal, Alabama." Results of the Phase II RFI are presented in the 1992 report "Phase II Addendum, RCRA Facility Investigations at Unit 1, Area F, and Selected Unit 3 Areas, Redstone Arsenal, Alabama."

Phase I and II RFI field investigations indicated that the extent of contamination in the soils at RSA-49 was found to be generally limited to the boundary of RSA-49, demarcated by the surrounding chain link fence. There were a few high arsenic levels in the surface soil south of the site boundary which were attributed to runoff or contamination related to the former Lewistite Manufacturing Plant.

G&M installed eight new monitoring wells during their Phase I and Phase II field investigations during 1990 to 1992. Along with the existing four monitoring wells, water samples were collected and analyzed for use in delineating the horizontal and vertical extent of groundwater contamination at RSA-49 (See Exhibit 3). G&M also performed a Health and Environmental Assessment to evaluate potential contamination exposure routes. The exposure pathway analysis showed the probability for contact with most media and exposure to site contaminants to be low. The potential for contact with contaminated surface soils was rated moderate. Access control to the area, including a secured chain link fence, was recommended for RSA-49.

Although constituents of concern were detected in subsurface soils and groundwater, the health exposure pathway analysis indicated that the probability is low that RSA personnel would be exposed to site contaminants. No interim or expedited remedial measures were recommended by G&M for RSA-49 at that time in accordance with the findings of the RFI.

## **2.3 INTERIM CORRECTIVE MEASURE DESCRIPTION**

The USACE Savannah District is responsible for the design and implementation of the ICM at RSA-49. The goal of the ICM is to provide interim remediation until further investigations and various alternatives can be adequately analyzed to determine an appropriate cleanup strategy. The USACE Savannah District has tasked Ebasco Services Incorporated,

now Foster Wheeler Environmental Corporation, to prepare interim remedial design documents pertaining to the ICM at RSA-49. The ICM is designed to inhibit contamination migration by placing a clay layer or "cap" over the closed arsenic impoundments. However, additional data has been gathered through further soil investigations to determine the areal extent of the contamination beyond the existing fencing. The clay cap will cover the identified area and serve to minimize infiltration of precipitation into the contaminated material and to prevent migration through surface erosion of contaminated material from the site. The cap will be covered with topsoil and vegetation will be established for erosion control. The existing drainage ditch traversing the arsenic impoundments will be relocated to maintain a safe distance from the new cap. Access to the site will be restricted through the replacement of the existing deteriorated fence with of a security fence and locked gate.

## **2.4 FEASIBILITY STUDY**

The USACE Huntsville Division is responsible for the development of the FS at RSA-49. Upon completion of the RFI by G&M in 1992, the Huntsville Division tasked Environmental Science & Engineering, Incorporated (ESE) to perform a "streamlined" CMS. The draft CMS examined 10 areas, including RSA-49. The CMS identified and recommended alternatives for the final remediation of contaminated media (soil, sediment, and groundwater) in each study area. The preferred alternative currently proposed for final remediation at RSA-49 is long-term monitoring of groundwater, but the results of ICM sampling will be analyzed before the preferred alternative or Proposed Plan is presented. In light of the NPL listing, EPA has determined that the CMS should be prepared as a FS with a risk assessment. Upon approval by the EPA, ADEM and MICOM, a Draft Final FS and the Proposed Plan will be made available for public review and comment. Public involvement will include a public meeting presentation. The Final FS will address any technical comments presented which were not addressed in the draft version. All public comments received during the public comment period will be responded to in the Responsiveness Summary and considered in the Record of Decision of the final remedial alternative selected.

## SECTION 3.0 COMMUNITY PROFILE AND KEY ISSUES OF CONCERN

### 3.1 COMMUNITY PROFILE

The use of the words "public" or "community" in this document refers to the interested and concerned citizens and the responsible representatives and officials both on and off the installation. At RSA-49, the adjacent property users and/or their responsible installation representative would likely be the most interested community since RSA-49 is well within the installation boundaries. This on-post community particularly includes those using the facilities along Digney Road and the lessee of 244 acres of prime agricultural land north of RSA-49. As shown on Exhibit 3, RSA-49 is accessed from the parking lot of Building 4381, the Research, Development and Engineering Center. This is the area of the former Lewisite Manufacturing plant to the south of the site. This parking area is currently occupied by six trailers identified as G-1 through G-6 used as office and laboratory space. Approximately 100 government and contractor/civilian employees work at this center for the Command Control and Computer Technology Branch of the Guidance and Control Directorate.

The Civilian Wellness Center, Building 4460, is a new facility across the street from RSA-49. The Threat Simulator Management Office is just south on Digney Road in Buildings 4497 and 4496. The Millimeter Wave Length Building is to the west of the site at Building 4372, shown on Exhibit 2. It is on Army property but is operated by the National Aeronautics and Space Administration (NASA). The NASA Marshall Space Flight Center property is further west of the site. NASA operations are accessible from Digney Road.

The MICOM Public Affairs and Environmental Management Offices will provide any courtesy calls and information mailings regarding field activities and site updates to the points of contact at these facilities as identified in Appendix A.

The off-post community which would likely have the most interest in RSA-49 activities is the community of Triana adjacent to the southwest installation boundary. Triana is approximately 9.6 miles downstream of RSA-49 at which point Indian Creek leaves the Installation. Triana would be the first off-post recipients of any potential contamination

which could leave the Installation via surface or groundwater. Triana has been directly impacted and involved in the Triana/Tennessee River Superfund site which was the result of contamination of surface waters and fish with dichloro-diphenyl-trichloroethane, commonly referred to as DDT, produced on Redstone Arsenal by the Olin Corporation until 1970. Due to the ingestion of DDT-contaminated fish, the health of some residents of Triana is being monitored by the Agency for Toxic Substances and Disease Registry (ATSDR). Affected residents are being treated for DDT contamination by state health agencies. Accordingly, the community will likely be sensitive to, and interested in, the findings and activities on Redstone Arsenal anywhere upstream of their town. Off-site public contacts are listed in Appendix A of the Installation CRP.

### **3.2 PREVIOUS COMMUNITY INVOLVEMENT AND COMMUNITY RELATIONS ACTIVITIES**

Community relations between Redstone Arsenal and the surrounding communities were established upon recognition of the DDT impacts off-site in Triana in 1978. Then in 1989, additional reports were produced regarding the results of investigations at numerous SWMUs on Redstone Arsenal, including RSA-49. At that time, the Installation Commander met with the Huntsville-Army Community Relations Committee to discuss the status of the SWMUs and local elected officials and health representatives were also informed. In early April 1989, Redstone Arsenal invited the local newspaper and television reporters for a press briefing and tour of representative sites. Numerous articles were published at that time.

There have been few queries from the public or the press since that time until May 24, 1993 when a news article about the cleanup activities at Redstone Arsenal was published. RSA-49 was among the sites described, although the site locations and names were not provided. Further articles were released to the public in July 1993 regarding the proposal to include Redstone Arsenal on the NPL.

A fact sheet describing the corrective measures being implemented at Redstone Arsenal, including RSA-49 activities, was provided to the public at the Olin DDT public meeting on July 15, 1993 in Triana. This fact sheet and others are included in Appendix B. There has

been no negative publicity or public response to the findings to date. Redstone Arsenal is anxious to present specific plans to the public of any proposed restoration as determined from the findings of the investigations.

All questions from the public will be directed through the MICOM Public Affairs Office at Redstone Arsenal so that public information needs may be monitored and news releases may be provided to the public as appropriate. Other personnel identified to date as interested or involved in RSA-49 activities are listed in Appendix A.

### **3.3 KEY ISSUES OF CONCERN**

Community concern regarding contamination at Redstone Arsenal and the associated environmental restoration program generally appears to be low in the Huntsville and Madison County communities. The long-term presence of the installation and the close connection between the mission at Redstone Arsenal and the economy of the area tends to increase the public's acceptance of any activities which may create inconveniences or concerns. Based on news media response, it appears that the community generally perceives that Redstone Arsenal is working effectively with regulatory agencies and is responding appropriately to identify and remediate contamination at the installation in order to protect the environment and health of the community.

The community of concern regarding RSA-49 activities is the surrounding on-post facilities which includes the lessee of agricultural land north of RSA-49, and the downstream off-post town of Triana. Considering their previous exposure to contaminants emanating from the installation property, Triana residents are concerned that contamination from any activities at Redstone Arsenal which are located near waterways could reach their community. When contacted in November 1992 about information needs regarding Unit 2, comprising several SWMUs including RSA-13 on Redstone Arsenal, Triana Town Council members were not aware of additional contamination areas at Redstone Arsenal upstream from their community. The Town Council members expressed the desire that their community be kept informed of any potential upstream contamination.

Potential issues during RSA-49 ICM and FS activities may come from the Triana residents and the federal agencies performing ongoing monitoring in the surrounding waterways. In addition, employees near the RSA-49 site may become concerned about potential exposure to contamination when sampling is performed near their offices. Presently, six concerns have been expressed during conversations with Triana and on-post representatives which relate to RSA-49: use of adjacent agricultural land, traffic and parking, security and surveillance, public health, the availability of information, and fish and wildlife protection.

***Use of Adjacent Agricultural Land*** - The site is surrounded by a 244-acre lease of prime agricultural land used for growing hay and grazing cattle. All agricultural leases are five-year contracts though the RSA MICOM Real Estate Office. Permission to access leased land near RSA-49 will need to be obtained from the lessee in accordance with the five-year lease contract which expires in 1997. The upcoming site activities expected to require access to this property include: sampling of potential borrow areas, removal of the existing fence, erection of a new fence approximately 50 feet farther than the existing perimeter, and additional soil sampling. The USACE Mobile District will also be involved in the right-of-entry process which could take up to three months to complete. The issue of property depreciation may affect right-of-entry terms and conditions since the lessee paid the highest bid for use of what was offered as prime farmland surrounded with new government fencing.

***Traffic and Parking*** - The office and laboratory operations at Building 4381 could be disrupted if site activities require construction or earth moving equipment to access the site through their parking lot. Other personnel in facilities along Digney Road raised concerns about traffic during the work day particularly at the local rush hours of 6 a.m., from 10:30 a.m. to 12:30 p.m., and from 3:30 to 5:30 p.m. Coordination is requested in advance to prevent any unnecessary travel inconveniences.

***Security and Surveillance Issues*** - Adjacent installation facilities employ security and surveillance equipment due to the sensitive nature of the work being performed. The concern was voiced regarding security clearances and surveillance of field teams around the Research, Development and Engineering Center and the Threat Simulator Management property, particularly if sampling is desired on or near these properties. Consideration

should be given to all property users in the form of courtesy calls if site access is being scheduled or notification of field team presence.

**Public Health** - Health concerns may become an issue for employees at the Research, Engineering and Development Center at Building 4381 and to users of other adjacent property, but present the greatest concern to Triana residents. Some Triana residents participate in an ongoing medical surveillance program funded by Olin Corporation and under the review of the ATSDR. The perception that contamination identified even ten miles upstream of their community presents the potential for additional exposure may add mental stress to an existing reality of impacted health. ATSDR plans to perform a health assessment when the installation is included on the NPL.

**Availability of Information** - Triana is presently the location of the information repository for the Olin DDT contamination project, and Triana desires an active role in future involvement with Redstone Arsenal. Town representatives have requested that Redstone Arsenal establish an information repository at Triana Town Hall for upstream Redstone Arsenal investigations. The opportunity to readily investigate and ask questions can remove any fear of the unknown. Ready access to documents allows for an informed participation in the decision-making process.

**Fish and Wildlife Protection** - RSA-49 is located north of the Wheeler National Wildlife Refuge, and is drained by ditches which eventually flow into the Huntsville Spring Branch of the Wheeler Reservoir on the Refuge. The U.S. Fish and Wildlife Service is interested in assuring that their jurisdiction is protected and wants to be kept informed of site findings and activities.



## **SECTION 4.0 PUBLIC INVOLVEMENT AND RESPONSE PLAN**

### **4.1 CRP IMPLEMENTATION**

The Installation CRP is implemented at RSA-49 through this PIRP. The information and references of the CRP are applied at RSA-49 except as modified or supplemented by this PIRP. The MICOM Public Affairs Office at Redstone Arsenal is responsible for the implementation of these activities as required by IRP mandates, the IAG, and as appropriate to meet community needs.

### **4.2 ACTIVITIES**

The following activities are proposed for implementation during the RSA-49 FS and the ICM design and installation at Redstone Arsenal.

#### **4.2.1 Points of Contact**

Ms. Pamela Rogers, Public Affairs Specialist, MICOM Public Affairs Office, is the Redstone Arsenal point of contact. In coordination with the appropriate USACE Public Affairs Officer, she will inform the responsible official(s) of activities, findings, and other developments on an ongoing basis throughout the IRP activities at RSA-49. Ms. Rogers will identify the responsible technical contacts and ensure that timely responses are provided to community inquiries. Through this single point of contact, public and media interest can be monitored so that appropriate actions may be taken to meet community needs.

#### **4.2.2 Public Information Repository/Administrative Record**

Locations for the on-post and two off-post information repositories identified in Appendix D of the Installation CRP were established by the MICOM Public Affairs Office at Redstone Arsenal. The repositories will contain the administrative record, the compilation of documents, data reports and other information that is important to the status of and decisions made relative to the site. The file will be updated as additional information becomes

available. An index for easy reference will be provided. State and federal regulatory agencies will also maintain an RSA-49 project file.

#### **4.2.3 Public Meetings**

A formal public meeting will be scheduled upon completion of the draft final FS currently being developed for Redstone Arsenal by the USACE Huntsville Division. The FS presents alternatives for final remediation of the RSA-49 site. Suggested locations for public meetings are provided in Appendix E of the Installation CRP. Additional locations will be identified if required to meet the specific meeting objectives.

#### **4.2.4 Availability Sessions**

Availability sessions may be made available at community centers or at local libraries, and may follow a presentation, or perhaps an introduction made at a local club or other civic organization gathering. Availability sessions are appropriate when small audiences are anticipated for activities such as RSA-49 IRP progress updates. These informal gatherings may be particularly effective to discuss ICM design, installation and operations, or during the public comment period to further discuss individual questions or technical detail of the FS and the "proposed plan" (preferred alternative).

#### **4.2.5 Fact Sheet Distribution**

To inform the community of RSA-49 activities and findings during IRP activities, fact sheets may be prepared, as appropriate. The Redstone Arsenal may send fact sheets directly to interested community residents, interested parties, media contacts, and applicable local officials, when appropriate. Anyone wishing to be added to the mailing list may contact the MICOM Public Affairs Office at Redstone Arsenal to request inclusion on the list. Based on the draft final FS prepared for final remediation of RSA-49, a "proposed plan" for final remediation will also be presented in a fact sheet format for public comment.

#### **4.2.6 News Releases**

Regular status updates of RSA-49 progress should be provided in the installation *Redstone Rocket* and the local *Huntsville Times* newspapers, and the other media resources. News releases should support public notices and encourage public comment and participation. During the final ICM design stage of the project, a news release will provide information contained in the design report, future construction plans and the establishment of the information repository with availability of pertinent documents. A second news release shall go out when there is significant activity on site, prior to the beginning of actual construction of the ICM. This release will discuss the components of the ICM and will contain the background and history of RSA-49.

#### **4.2.7 Press Briefings**

Press briefings may become appropriate should increased media attention or community concerns be noted. Press visits to the sites may be available but must be scheduled through the MICOM Public Affairs Office at Redstone Arsenal.

#### **4.2.8 Public Notice**

Public notices will be prepared during RSA-49 IRP activities to announce availability of documents in the information repository, or pertinent site activities, if necessary. A public notice will be made to announce the public meeting and comment period for response to the draft final FS and the Proposed Plan for final remediation at RSA-49, and later to announce and request response to the Record of Decision.

#### **4.2.9 Public Comment Period/Responsiveness Summary**

The public comment period will be announced by a public notice of the availability of the draft final FS and of the Record of Decision. A minimum of 30 days is allowed for written and oral comments to be submitted. The comments and Army responses are summarized in

the Responsiveness Summary and became part of the administrative record and the Record of Decision.

#### **4.2.10 Technical Review Committee**

A Technical Review Committee (TRC) was established in accordance with Army Regulation 200-1 requirements. The first meeting was held on June 7, 1994 and a second is scheduled for December 5, 1994. Chaired by the Commanding Officer, members are drawn from the MICOM Environmental Management and Public Affairs Offices at Redstone Arsenal, Army agency representatives, state regulatory agencies and local environmental and/or health agencies. Representatives from the existing Huntsville-Army Community Relations Committee, and the Triana Review Panel for the Olin DDT contamination site and other community groups may desire to be included in TRC membership. On-post personnel and off-post citizens will be selected to represent other community interests.

#### **4.2.11 Revision of the PIRP**

This RSA-49 PIRP should be reviewed and/or revised when there is a significant change in the involvement or concerns in the community, and upon announcement of the Record of Decision of the final remedial design based on the FS. The revision of the PIRP will also address the Final Remedial Design and implementation, and community response at the public meeting and during the public comment period. It should include an update and verification of the information within the PIRP, assessment of the effectiveness of the PIRP to date, and determination of appropriate methods for the future roles of the community during final remedial design, installation, operation and maintenance phases. Community interviews should be considered for this RSA-49 PIRP revision.

### **4.3 SCHEDULE**

A tentative schedule for public involvement and response activities is presented in Exhibit 4. This schedule may need to be revised and updated to reflect NPL status, IAG requirements, RSA-49 IRP developments and community needs.

**EXHIBIT 4**  
**TENTATIVE SCHEDULE OF**  
**PUBLIC INVOLVEMENT AND RESPONSE ACTIVITIES**  
**AT RSA-49**  
**Redstone Arsenal, Alabama**

Activity	Date
Establish Points of Contact	• December 1993
Establish Public Information Repository	• Update as Necessary
Public Notice	<ul style="list-style-type: none"> <li>• Upon Document Availability in Repository</li> <li>• To Announce Public Meeting/Comment Period</li> <li>• To Announce Record of Decision</li> </ul>
Fact Sheet Distribution	<ul style="list-style-type: none"> <li>• As Required for Technical and Informational Explanations</li> <li>• Notification and Analysis of Proposed Plan</li> </ul>
News Release	<ul style="list-style-type: none"> <li>• In Support of Site Activities</li> <li>• Final Design Stage</li> <li>• Prior to ICM Construction</li> </ul>
Public Comment Period/Formal Public Meeting	• Upon Release of the Draft Final FS
Responsiveness Summary	• After Public Comment Period/Meeting
Availability Session/Gathering	• As Required, Particularly for ICM Design
Technical Review Committee	• Established June 7, 1994
Review/Revise PIRP	• Upon Record of Decision for Remedial Action

**APPENDIX A**  
**LISTING OF CONTACTS AND INTERESTED PARTIES**  
**FOR RSA-49**  
**Redstone Arsenal, Alabama**

This listing is supplemental to the Installation Community Relations Program listing of public contacts and interested parties. A separate mailing list of concerned and interested private citizens is also kept by the MICOM Public Affairs Office at Redstone Arsenal for individuals not wishing to be identified on a public listing.

**A. POINT OF CONTACT**

Commander (205) 842-0561  
US Army Missile Command (205) 955-0133 Fax  
Public Affairs Office  
ATTN: AMSMI-IN (Pamela Rogers)  
Redstone Arsenal, AL 35898-5020

**B. INSTALLATION REPRESENTATIVES**

**REDSTONE ARSENAL**

Commander (205) 876-8607  
US Army Missile Command  
ATTN: AMSMI-EQ (Bill Schroder)  
Redstone Arsenal, AL 35898-5349

Commander (205) 955-6967  
US Army Missile Command (205) 876-0887 Fax  
ATTN: AMSMI-EQ (Craig Northridge)  
Redstone Arsenal, AL 35898-5349

**ARMY CORPS OF ENGINEERS**

**Public Affairs**

Commander (912) 652-5270  
US Army Corps of Engineers (912) 652-5944 Fax  
Savannah District  
ATTN: CESAS-PA (James Parker)  
P. O. Box 0889  
100 West Oglethorpe Avenue  
Savannah, GA 31402-0889

Design Technical Contact

Commander (912) 652-5792  
US Army Corps of Engineers (912) 652-5311 Fax  
Savannah District  
ATTN: CESAS-PM-H (Juana Torres-Perez)  
P. O. Box 0889  
100 West Oglethorpe Avenue  
Savannah, GA 31402-0889

FS Technical Contact

Commander (205) 955-3088  
US Army Engineer Division (205) 955-4664 Fax  
ATTN: CEHND-PM-EP (Dorothy Richards)  
P. O. Box 1600  
106 Wynn Drive  
Huntsville, AL 35805-1957

ADJACENT PROPERTIES

Commander  
U.S. Army Missile Command  
ATTN: AMSMI-MP-PR (Jesse Horton) (205) 876-3122  
Redstone Arsenal, AL 35898-5000

Commander  
U.S. Army Missile Command (205) 876-0888  
ATTN: AMSMI-MP-PR (Carol Tunstill) (205) 876-0412 Fax  
Redstone Arsenal, AL 35898-5000  
regarding leased property near RSA-49  
farmed by Dave Mann, Jr.

Commander  
U.S. Army Missile Command  
ATTN: AMSMI-RD-GC-S (Michael Petruzzello) (205) 876-8691/3110  
Command Control and Computer Technology Branch (205) 876-9106 Fax  
Research, Development, and Engineering Center, Bldg 4381  
Redstone Arsenal, AL 35898

Civilian Wellness Center, Bldg 4460  
Attn: Kelley Melcher (205) 955-6844  
P.O. Box 8192  
Redstone Arsenal, AL 35808-0192

Director  
Threat Simulator Management Office  
ATTN: AMCPM-ITTS-S (Bldgs 4496/7)  
Redstone Arsenal, AL 35898-7461

(205) 876-9656

Supervisor of Security Libby Bevel, ext 281  
Facilities Manager Wayne G. Hughes, ext 299

Dr. Rebecca McCaleb  
Code AEO1  
NASA Environmental Management Office  
Marshall Space Flight Center, AL 35812

(205) 544-4367

Dom Amatore  
Code CA10  
NASA Public Affairs Office  
Marshall Space Flight Center, AL 35812

(205) 544-0034  
(205) 544-5852 Fax

### **C. INTERESTED PARTIES**

See Installation CRP for complete listing. No additional organizations or agencies have been identified at this time with particular interest in RSA-49.



**APPENDIX B**  
**INSTALLATION RESTORATION PROGRAM FACT SHEETS**  
**Redstone Arsenal, Alabama**

- 1 - Corrective Measures at Units 1 & 2, Area F and RSA-G, July 1993
- 2 - Corrective Measures at Unit 3/Area F, May 1994
- 3 - Corrective Measures at Unit 2, May 1994
- 4 - Corrective Measures at RSA-49, October 1994
- 5 - Corrective Measures at RSA-10, October 1994



# Redstone Arsenal

MADISON COUNTY, ALABAMA



INSTALLATION RESTORATION PROGRAM FACT SHEET

JULY 1993

CORRECTIVE MEASURES AT UNITS 1 & 2, AREA F AND RSA-G

*This fact sheet is one in a series designed to inform residents and local officials of the Army's installation restoration program and interim corrective measures at Redstone Arsenal.*

## ARSENAL DESCRIPTION

Redstone Arsenal (RSA) is located in north central Alabama in the southwestern portion of Madison County. RSA is bounded by the City of Huntsville to the north and east, the cities of Madison and Triana to the west, and the Tennessee River to the south. RSA encompasses approximately 38,300 acres. The National Aeronautics and Space Administration (NASA) leases 1,841 acres for the George C. Marshall Space Flight Center. The Wheeler National Wildlife Refuge owns 4,100 acres and the Tennessee Valley Authority owns 2,900 acres within the boundaries of RSA.

RSA is under the jurisdiction of the U.S. Army Materiel Command, the major Army command responsible for insuring the weapons, equipment, and logistic readiness for the Army.

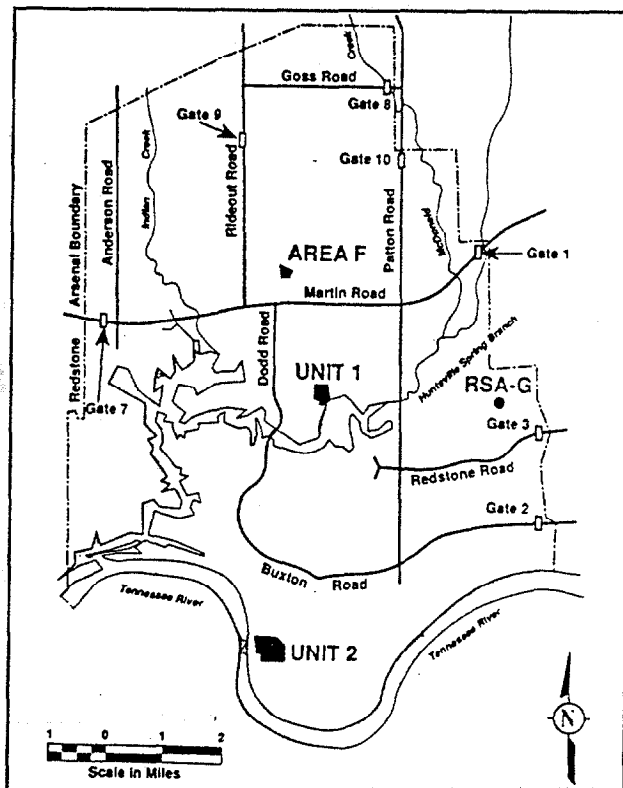
## PURPOSE OF INTERIM CORRECTIVE MEASURES AT RSA

The U.S. Army has been evaluating past hazardous waste management practices at Redstone Arsenal. Studies are being performed to evaluate the practices in accordance with the requirements of the Resource Conservation and Recovery Act of 1976 (RCRA).

RCRA requires identification and corrective action at any solid waste management unit (SWMU) located on the installation which is releasing hazardous constituents to the environment. A SWMU is defined as any discernable waste management unit at a RCRA facility from which hazardous constituents might migrate, irrespective of whether the unit was intended for the management of solid and/or hazardous waste. This does not include units in which wastes have not been managed, product storage areas, or accidental spills from production areas.

In addition to RCRA, Congress established the Defense Environmental Restoration Program (DERP) in 1986. Under DERP, the Department of Defense (includes the Army) is required to identify, assess and remediate environmental problems, to protect the health and safety of installation personnel and the public, and to protect the quality of the environment. The portion of DERP applicable to real property currently controlled by the Army is the Installation Restoration Program (IRP).

In accordance with RCRA and DERP, Redstone Arsenal is implementing numerous corrective measures and interim corrective measures (ICMs) at SWMUs identified on the installation. These SWMU corrective actions are being performed under the IRP. This fact sheet addresses the ICMs to be implemented at four SWMUs: Unit 1, Unit 2, Area F and RSA-G.



LOCATION OF UNIT 1, UNIT 2, AREA F AND RSA-G

## INTERIM CORRECTIVE MEASURE SITES

### Unit 1 (RSA-10)

This SWMU is an active landfill comprised of two disposal facilities: a former sanitary landfill which is currently an active inert landfill; and the closed DDT Waste Soils Landfill. Unit 1 consists of approximately 68.5 acres bordered by woods to the north, another closed landfill to the east, wetlands and the Wheeler National Wildlife Refuge to the south, and NASA-leased land to the west. The area has been used for a variety of

wastes including household waste, waste oil, infectious waste, installation debris, asbestos, and ash from incinerated paper. A special SWMU constructed for the disposal of soils containing DDT waste is also located within the boundaries of this Unit. Contaminants identified in the groundwater include chlorinated hydrocarbons, benzene, toluene, ethylene and xylene, and various metals and pesticides.

Investigations at Unit 1 began in 1989 and a RCRA Facility Investigation (RFI) was completed in 1992. On March 27, 1992, the Alabama Department of Environmental Management (ADEM) issued a Notice of Violation to RSA directing that corrective measures be implemented. An ICM Design is currently being prepared to provide immediate treatment of contaminated groundwater using an air stripper followed by liquid phase carbon adsorption.

A Corrective Measure Study (CMS) also is underway for Unit 1. A CMS identifies alternatives for final corrective measures at a given site. The draft CMS for Unit 1 is under review by the Huntsville Division of the U.S. Army Corps of Engineers (USACE). The preferred alternative for final correction is groundwater treatment using advanced oxidation by ultraviolet light and hydrogen peroxide (UV/H<sub>2</sub>O<sub>2</sub>), and soil treatment by excavation/on-site incineration and capping.

#### Unit 2 (RSA-12, 13, 14, 131, 132, 133)

Unit 2 is an active open burn/open detonation (OB/OD) area located on the south end of RSA. This area is used for the disposal of explosives and explosive-contaminated materials. There are actually six SWMUs at Unit 2: the OB pans (RSA-12); unlined OB areas (RSA-13); waste burn trenches (RSA-14); OD area (RSA-131); former popping furnace (RSA-132); and former rocket washout pad (RSA-133). Explosives and volatile organic compounds (VOCs) were found in the soil layers at RSA-13 and -14, explosives were found in the sediment layer at RSA-14, and VOCs were found in the groundwater which exceed minimum action levels.

Environmental studies at Unit 2 began in 1989 and the RFI was completed in 1992. On March 27, 1992, ADEM issued a Notice of Violation to RSA directing that corrective measures be implemented. An ICM Design is currently being reviewed by the Savannah District of the USACE which will provide immediate treatment of contaminated groundwater using advanced oxidation with UV/H<sub>2</sub>O<sub>2</sub>. Additionally, a draft CMS is under review by the Huntsville USACE identifying alternative final corrective measures. The preferred alternative for final correction is groundwater treatment by air stripping and soil treatment by excavation/on-site incineration.

#### Unit 3/Area F (RSA-49)

Area F occupies approximately five acres in the center of RSA. Area F consists of three closed ponds used in the

1940s for the disposal of arsenic-contaminated waste from manufacturing facilities for Lewisite, a chemical blistering agent. Rubble and industrial wastes were used to fill the impoundments prior to the ponds being closed. The ponds were covered in 1977 and planted with grass and pine trees. Arsenic was found in the groundwater and soil, and polynuclear aromatic hydrocarbons (PAHs) were found in the soil.

Environmental studies began in 1989. The RFI was completed in 1992. On March 27, 1992, ADEM issued a Notice of Violation to RSA directing that corrective measures be implemented at Area F. An ICM Design is currently being prepared which will provide for placement of a clay cap over the former ponds and a fence around the area. A draft CMS is under review by the Huntsville USACE. The preferred final correction alternative for groundwater is pretreatment only, and for soil is no further action.

#### RSA-G

RSA-G is the area surrounding the Thiokol Degreaser at Building 7664. RSA-G is within the Thiokol Complex, a government-owned contractor-operated facility, located in the southeast portion of RSA. Groundwater and soil at this site is contaminated, primarily with trichloroethene (TCE).

Environmental studies at RSA-G began in 1989. Phase II of the RFI is now nearing completion. There is no outstanding ADEM Notice of Violation for RSA-G. An ICM Design is in progress which will provide immediate treatment of contaminated groundwater using advanced UV/H<sub>2</sub>O<sub>2</sub> oxidation. To date, a CMS has not been initiated.

#### REQUEST FOR PUBLIC PARTICIPATION

A Community Relations Plan (CRP) or Public Involvement and Response Plan (PIRP) is required for all DERP properties that have sites included on or proposed for inclusion on the National Priorities List (NPL). Redstone Arsenal was placed on the proposed NPL on June 23, 1993 (Federal Register Vol 58, No 119). A CRP/PIRP is currently being prepared for the four sites specifically identified in this fact sheet: Unit 1, Unit 2, Area F and RSA-G. The CRP/PIRP will be implemented throughout the interim corrective measure design at these sites. The CRP/PIRP will then be reviewed and/or revised as appropriate to provide for public involvement throughout the corrective action phases.

Upon availability of a draft final CMS, a press release and public notice will announce the availability of the document during a 45-day public comment period including a public meeting. The public will be asked to

comment on the preferred and other alternatives from among those which were studied for the corrective action. Public meetings will be hosted by the MICOM Public Affairs Office and supported by the responsible USACE. Local, state and Army representatives will be invited. All issues will be discussed and the public will have an opportunity to ask questions directly to a panel of site investigators, as well as to the attending representatives.

#### PUBLIC INFORMATION

A public information repository has been established for public access to the data and reports regarding site investigations, studies, and other activities conducted under the RSA IRP. Reports are released to the repository in final form after regulatory review. Press releases and fact sheets will be included in the collection. The collection will be updated as information becomes available. The information contained in the repository is available through ADEM and on-site at the MICOM Public Affairs Office at Redstone Arsenal. The primary off-site location is:

Huntsville-Madison County Library  
915 Monroe Street, SW  
Huntsville, Alabama 35804 (205) 532-5957

The information may also be obtained through the:

Town Hall, Town of Triana  
640 Sixth Street  
Madison, Alabama 35758 (205) 772-0151

A public announcement will be made whenever copies of CRP/PIRP, ICM Design reports, CMS reports and other pertinent documents are available for public review at the information repositories. The local Huntsville newspapers will also be used for press releases and public announcements.

The Army encourages the public to visit the information repositories and attend any public meetings to become more knowledgeable about the environmental studies at RSA. If you did not receive this fact sheet in the mail and would like to be placed on a mailing list to receive future notices regarding the DERP activities, please complete the form at the bottom of this page and mail to the address below.

#### FOR FURTHER INFORMATION:

The following Army representative has been identified as the point of contact regarding Redstone Arsenal remediation activities under the DERP Program:

Mr. Ed Peters, Public Affairs Specialist  
Public Affairs Office  
U.S. Army Missile Command  
Redstone Arsenal, Alabama 35898-5020

(205) 842-0560

*Prepared for the U.S. Army Corps of Engineers, Savannah District, and Redstone Arsenal.*

#### REQUEST FOR INCLUSION ON THE MAILING LIST REDSTONE ARSENAL DERP

Please print your mailing address here and return to the MICOM Public Affairs Office of Redstone Arsenal. You will receive notice of public meetings or environmental program status as it becomes available.

Name \_\_\_\_\_

My particular interests and/or  
concerns are:

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

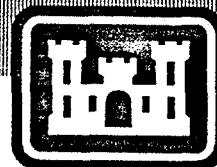
Telephone (optional) \_\_\_\_\_

Comments:



# Redstone Arsenal

MADISON COUNTY, ALABAMA



MAY 1994

INSTALLATION RESTORATION PROGRAM  
FACT SHEET No. 2

CORRECTIVE MEASURES  
AT UNIT 3/AREA F

*This fact sheet is part of a series designed to inform residents and local officials of the Army's ongoing installation restoration program at particular SWMU sites.*

## INTRODUCTION

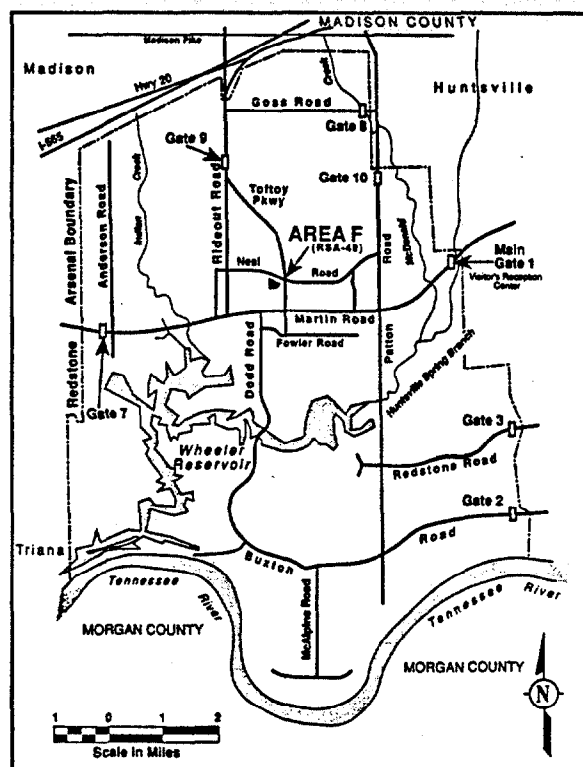
The initial fact sheet, published in July 1993, introduced the public to the Army's Defense Environmental Restoration Program (DERP) which was established in 1986, and the Installation Restoration Program (IRP) activities at several sites at Redstone Arsenal. This fact sheet is an update of the corrective measure status at one of the sites: Unit 3/Area F. All documents mentioned are available at the information repositories listed.

## ARSENAL DESCRIPTION

Redstone Arsenal (RSA) is located in north central Alabama in the southwestern portion of Madison County. Redstone Arsenal is under the jurisdiction of the U.S. Army Materiel Command (AMC), the major Army command responsible for insuring the weapons, equipment, and logistic readiness for the Army. Of the approximately 38,300 acres, the Wheeler National Wildlife Refuge occupies 4,100 acres within the boundaries of Redstone Arsenal. The National Aeronautics and Space Administration (NASA) leases 1,841 acres for the George C. Marshall Space Flight Center.

The U.S. Army has been evaluating past hazardous waste management practices at Redstone Arsenal. Studies are being performed to evaluate the practices in accordance with the requirements of the Resource Conservation and Recovery Act of 1976 (RCRA), required at all active facilities managing hazardous materials.

Redstone Arsenal is implementing interim corrective measures (ICMs) at several sites to address the immediate needs for environmental restoration. This fact sheet addresses the ICM and related activities at Unit 3 / Area F, solid waste management unit (SWMU) RSA-49.



LOCATION OF UNIT 3/AREA F

## SITE DEVELOPMENTS AT UNIT 3/AREA F

Unit 3/Area F occupies approximately five acres in the center of Redstone Arsenal designated as SWMU RSA-49. Area F consists of three closed ponds used in the 1940s for the disposal of arsenic-contaminated waste from manufacturing facilities for Lewisite, a chemical blistering agent. Rubble and industrial wastes were used to fill the impoundments prior to the ponds being closed. The ponds were covered in 1977 and planted with grass and pine trees. Arsenic was found in the groundwater and soil, and polynuclear aromatic hydrocarbons (PAHs) were found in the soil.

## Clay Cap Design

The draft ICM design for Area F was submitted to the U.S. Army Corps of Engineers (USACE), Savannah District in July 1993. The design originally called for the placement of a temporary 2-foot deep clay layer, called a cap, over the former ponds with a fence around the area. Review has determined that the design now will include the placement of a clay cap conforming to the requirements of RCRA. The RCRA cap will be multi-layer, including geotextile, drainage, and biobarrier layers in addition to the clay. The RCRA cap will provide additional protection against infiltration, erosion, instability and vermin. A RCRA cap would increase the cost only a small percentage in the short-term and would save money in the long-term for the final corrective measure at Area F. However, some shallow soil contamination has been detected outside the proposed boundary of the originally proposed clay cap, and the U.S. Environmental Protection Agency (EPA) wants Redstone Arsenal to address this issue. Therefore, more data is necessary to determine the exact boundary for the RCRA cap.

## Soil Sampling at Area F

The additional data needed to determine the extent of soil contamination for capping purposes and the extent of shallow soil contamination outside the proposed RCRA cap boundary will be collected by field sampling. The scope of the field program basically involves the installation of soil borings and sampling of soil for arsenic from the boreholes. Arsenic concentrations exceeding natural levels for soil in the area will be considered contaminated. This information will be used to complete the ICM design. It will also be cost effective to determine the required extent of a final RCRA cap at the same time the soil sampling is conducted to determine the extent of contamination.

In addition to installing and sampling soil borings, the field program will include the digging of test pits in an uncontaminated area adjacent to Area F. The purpose of the test pits is to view and physically test the clay material in that area to see if it is suitable for use as clay liner material for the RCRA cap at Unit 3/Area F.

At the conclusion of the field program, a technical report will be prepared which presents the results

of the program with conclusions and recommendations for completion of the ICM design.

## REQUEST FOR PUBLIC PARTICIPATION

Upon availability of a draft final Corrective Measure or Feasibility Study (CMS/FS) for Unit 3/ Area F, a press release and public notice will announce the availability of the document and a 30-day public comment period including a public meeting. The public will be asked to comment on the preferred and other alternatives from among those which were studied for the corrective action. The public notice will be placed in the local newspapers and through a direct mailing requesting community involvement to discuss the findings at a public meeting. These meetings will be hosted by the AMC Missile Command (MICOM) Public Affairs Office and supported by the responsible USACE. Local, state and Army representatives will be in attendance. All issues will be discussed and the public will have an opportunity to ask questions directly to a panel of site investigators, as well as to the attending representatives.

## PUBLIC INFORMATION

A public information repository has been established for public access to the data and reports regarding site investigations, studies, and other activities conducted under the RSA IRP. Reports are released to the repository in final form after regulatory review. Press releases and fact sheets are also included in the collection and will be updated as information becomes available. The information contained in the repository also is available on-site at the MICOM Public Affairs Office at Redstone Arsenal. The primary off-site location is:

Huntsville-Madison County Library  
915 Monroe Street, SW  
Huntsville, Alabama 35804  
(205) 532-5957

The information will also be maintained at the:

City Hall, City of Triana  
Madison, Alabama 35758  
(205) 772-0151

Public announcements are made whenever copies of community relations information, ICM Design reports, CMS/FS reports and other pertinent documents are available for public review at the information repositories. The Army encourages the public to visit the information repositories and attend any public meetings to become more knowledgeable about the environmental studies at Redstone Arsenal.

**FOR FURTHER INFORMATION:**

The following Army representative has been identified as the point of contact for the Army:

Ms. Pam Rogers, Public Affairs Specialist  
Public Affairs Office  
U.S. Army Missile Command  
Redstone Arsenal, Alabama 35898-5020  
(205) 842-0561

If you did not receive this fact sheet in the mail and would like to be placed on a mailing list to receive future notices regarding the DERP activities, please complete the form below and mail to the adjacent address.

**REQUEST FOR INCLUSION ON THE MAILING LIST FOR REDSTONE ARSENAL DERP**

Please print your mailing address here and return to the MICOM Public Affairs Office of Redstone Arsenal. You will receive notice of public meetings or environmental program status as it becomes available.

My primary interests/concerns are:

Name \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip Code \_\_\_\_\_

Telephone (optional) \_\_\_\_\_

Comments:

*Prepared for the U.S. Army Corps of Engineers, Savannah District, and Redstone Arsenal.*



# Redstone Arsenal

MADISON COUNTY, ALABAMA



MAY 1994

INSTALLATION RESTORATION PROGRAM  
FACT SHEET No. 3

CORRECTIVE MEASURES  
AT UNIT 2

*This fact sheet is part of a series designed to inform residents and local officials of the Army's ongoing installation restoration program at particular SWMU sites.*

## INTRODUCTION

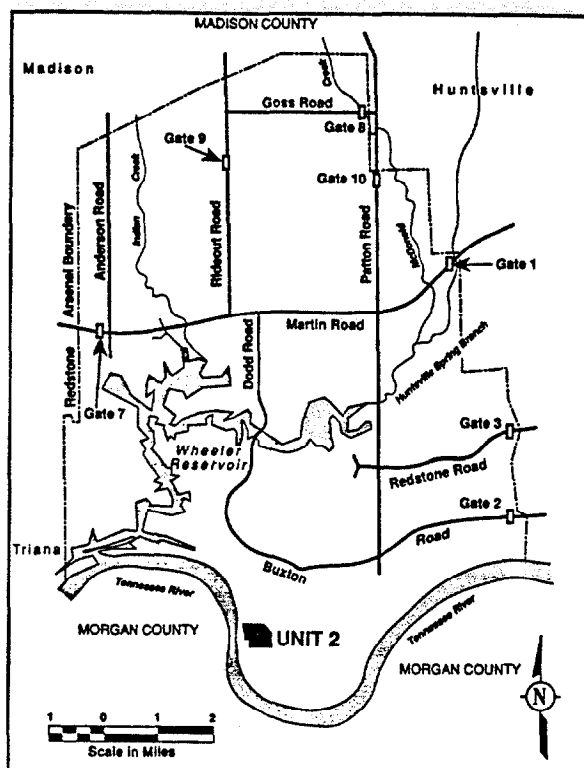
The initial fact sheet, published in July 1993, introduced the public to the Army's Defense Environmental Restoration Program (DERP) which was established in 1986, and the Installation Restoration Program (IRP) activities at several sites at Redstone Arsenal. This fact sheet is an update of the corrective measure status at one of the sites: Unit 2. All documents mentioned are available at the information repositories listed.

## ARSENAL DESCRIPTION

Redstone Arsenal (RSA) is located in north central Alabama in the southwestern portion of Madison County. Redstone Arsenal is under the jurisdiction of the U.S. Army Materiel Command (AMC), the major Army command responsible for insuring the weapons, equipment, and logistic readiness for the Army. Of the approximately 38,300 acres, the Wheeler National Wildlife Refuge occupies 4,100 acres within the boundaries of RSA. The National Aeronautics and Space Administration (NASA) leases 1,841 acres for the George C. Marshall Space Flight Center.

The U.S. Army has been evaluating past hazardous waste management practices at Redstone Arsenal. Studies are being performed to evaluate the practices in accordance with the requirements of the Resource Conservation and Recovery Act of 1976 (RCRA), required at all active facilities managing hazardous materials.

Redstone Arsenal is implementing interim corrective measures (ICMs) at several sites to address the immediate needs for environmental restoration. This fact sheet addresses the ICM and related activities at Unit 2, solid waste management units (SWMUs) RSA-12, -13, -14, -131, -132, -133.



LOCATION OF UNIT 2

## SITE DEVELOPMENTS AT UNIT 2

Unit 2 is an active open burn/open detonation (OB/OD) area located on the south end of Redstone Arsenal. This area is used for the disposal of explosives and explosive-contaminated materials. There are six SWMUs at Unit 2: the OB pans (RSA-12); unlined OB pads (RSA-13); waste burn trenches (RSA-14); OD area (RSA-131); former popping furnace (RSA-132); and former rocket washout pad (RSA-133). Explosives and volatile organic compounds (VOCs) found in the soil layers at RSA-13 and -14, explosives



found in the sediment layer at RSA-14, and VOCs found in the groundwater exceed minimum action levels.

Environmental studies at Unit 2 began in 1989 and the RCRA Facility Investigation (RFI) was completed in 1992. On March 27, 1992, the Alabama Department of Environmental Management issued a Notice of Violation to Redstone Arsenal directing that corrective measures be implemented.

### Test Well Installation at Unit 2

Because of the complex hydrogeology of the limestone bedrock beneath the Unit 2 site, it currently is very difficult to predict if the extraction wells proposed in the draft ICM design will penetrate a productive zone (a fracture in the bedrock), and if the aquifer will yield the predicted flows and contaminant concentrations.

The additional data needed to complete design will be collected during a field effort. The scope of the field program basically involves the installation of the extraction wells proposed for the ICM design, and the subsequent collection of chemical and physical data from those wells. The physical data that will be obtained from the drilling and testing effort includes:

- Sediment and bedrock characteristics to allow for optimum well screen design
- Aquifer hydraulics data to be used to project horizontal and vertical zones of capture and to project the quantity of water to be remediated.
- Groundwater quality data to be used to project future treatment requirements.

Chemical analyses of extracted groundwater obtained during the field program will provide data necessary to sufficiently characterize the groundwater contamination at the Unit 2 site. In particular, water quality parameters such as total suspended solids and concentrations of iron, metals and organics detected in previous investigations are needed to determine the magnitude of pretreatment required for the ICM system.

In addition, a pilot scale treatment system will be used during the field effort to treat extracted groundwater. Operational data from the pilot treatment system will establish design criteria for the full-scale ICM system.

At the conclusion of the field program, a technical report will be prepared which contains the results, conclusions and recommendations for completion of the ICM design.

### REQUEST FOR PUBLIC PARTICIPATION

Upon availability of a draft final FS for Unit 2, a press release and public notice will announce the availability of the document and a 30-day public comment period including a public meeting. The public will be asked to comment on the preferred and other alternatives from among those which were studied for the corrective action. The public notice will be placed in the local newspapers and through a direct mailing requesting community involvement to discuss the findings at a public meeting. These meetings will be hosted by the AMC Missile Command (MICOM) Public Affairs Office and supported by the responsible USACE. Local, state and Army representatives will be in attendance. All issues will be discussed and the public will have an opportunity to ask questions directly to a panel of site investigators, as well as to the attending representatives.

### PUBLIC INFORMATION

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available on-site at the MICOM Public Affairs Office at Redstone Arsenal. The primary off-site location is:

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Huntsville, Alabama 35804  
(205) 532-5957

The information will also be maintained at the:

City Hall, City of Triana  
Madison, Alabama 35758  
(205) 772-0151

Public announcements are made whenever copies of public involvement plans, ICM Design reports, CMS/FS reports and other pertinent documents are available for public review at the information repositories. The Army encourages the public to visit the information repositories and attend any public meetings to become more knowledgeable about the environmental studies at Redstone Arsenal.

#### FOR FURTHER INFORMATION:

The following Army representative has been identified as the point of contact for the Army activities regarding Redstone Arsenal remediation activities under the DERP Program:

Ms. Pam Rogers, Public Affairs Specialist  
Public Affairs Office  
U.S. Army Missile Command  
Redstone Arsenal, Alabama 35898-5020  
(205) 842-0561

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#### REQUEST FOR INCLUSION ON THE MAILING LIST FOR REDSTONE ARSENAL DERP

Please print your mailing address here and return to the MICOM Public Affairs Office of Redstone Arsenal. You will receive notice of public meetings or environmental program status as it becomes available.

My primary interests/concerns are:

Name \_\_\_\_\_

Affiliation \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

Zip Code \_\_\_\_\_

Telephone (optional) \_\_\_\_\_

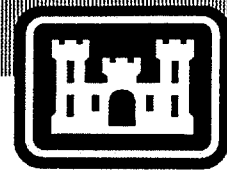
Comments:

*Prepared for the U.S. Army Corps of Engineers, Savannah District, and Redstone Arsenal.*



# Redstone Arsenal

MADISON COUNTY, ALABAMA



OCTOBER 1994

INSTALLATION RESTORATION PROGRAM  
FACT SHEET No. 4

CORRECTIVE MEASURES  
AT RSA-49

*This fact sheet is part of a series designed to inform residents and local officials of the Army's ongoing installation restoration program at particular sites.*

## INTRODUCTION

This fact sheet addresses the interim corrective measure (ICM) and related activities at solid waste management unit (SWMU) RSA-49, also known as Area F, the Arsenic Impoundment Area.

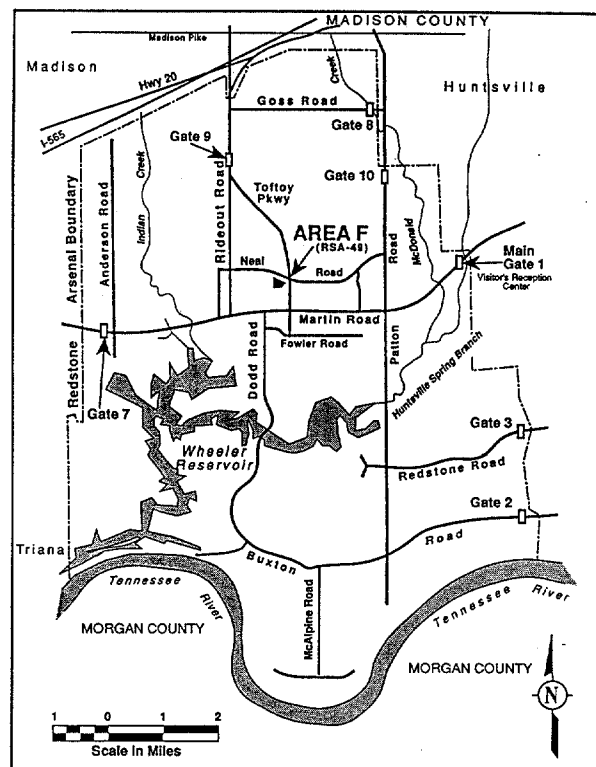
## RECENT SITE DEVELOPMENTS AT RSA-49

The field sampling program was completed in July 1994 and a technical report was prepared which presents those results. The report addresses the Resource Conservation and Recovery Act (RCRA) design requirements for a clay covering or "cap" with conclusions and recommendations for completion of the ICM design.

## SUMMARY OF SOIL SAMPLING AT RSA-49

Additional data needed to determine the extent of soil contamination and the extent of shallow soil contamination outside the proposed cap boundary was collected by field sampling during May 1994. This involved the installation of 52 soil borings and sampling of soil for arsenic from the boreholes. Additional sampling was performed in July 1994 at the southwest corner of the site and at the ditch to the south of RSA-49.

According to U.S. Environmental Protection Agency (EPA), arsenic concentrations exceeding the proposed 80 mg/kg RCRA clean-up level for soil in the area is considered contaminated. However, due to the potential for inconsistent distribution of the contaminants, the Army chose 40 mg/kg arsenic to be the action level. Under this action, soils with arsenic levels above 40 mg/kg will either be covered by the cap or will be excavated and either placed as fill material under the new cap or removed off-site as a hazardous waste for treatment or disposal in a RCRA landfill.

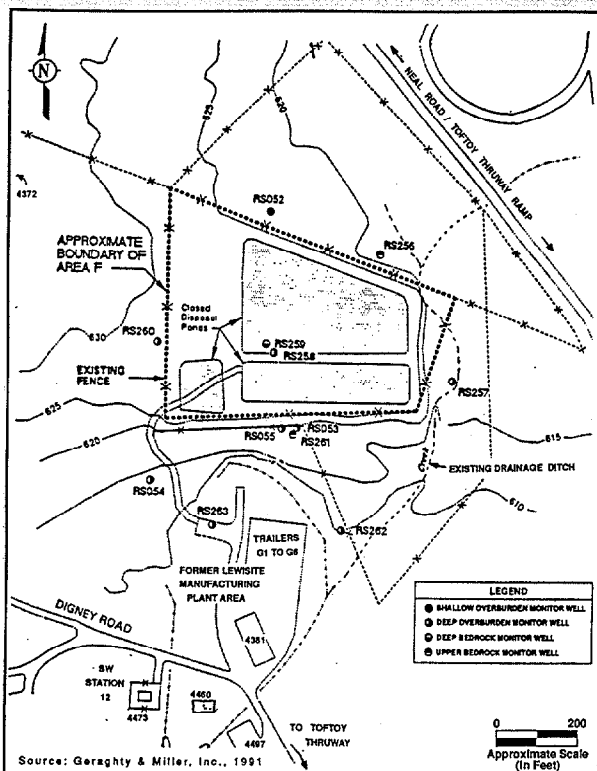


## SITE PREPARATION

The ICM consists of removing existing vegetation at the site and constructing the clay cap. Everything within the limits of the multilayer cap will be covered with a minimum of two feet of the selected clay, 18 inches of cover soil and 6 inches of top soil. The existing chain link fence with barbed wire will be removed, as will the five-strand barbed wire field fence about 15 feet to the north of the site. A new chainlink fence with a locking gate will be installed to prevent trespassing. The field fence will be reinstalled outside the replaced fence.

Contaminated soils requiring excavation are limited primarily to the drainage ditch south of the site.

Further studies will be performed to develop the Feasibility Study (FS) and to present a proposed plan for final remediation for agency and public review.



The information contained in the repository is available on-site at the MICOM Public Affairs Office at Redstone Arsenal. The primary off-site location is:

Huntsville-Madison County Library  
915 Monroe Street, SW  
Huntsville, Alabama 35804  
(205) 532-5957

The information will also be maintained at the:

City Hall, City of Triana  
Madison, Alabama 35758  
(205) 772-0151

The Army encourages the public to visit the information repositories and attend any public meetings to become more knowledgeable about the environmental studies at Redstone Arsenal.

Upon availability of a draft final FS for RSA-49, a press release and public notice will announce the availability of the document and a 30-day public comment period including a public meeting.

#### FOR FURTHER INFORMATION:

The following Army representative has been identified as the point of contact for the Army:

Ms. Pam Rogers, Public Affairs Specialist  
Public Affairs Office  
U.S. Army Missile Command  
Redstone Arsenal, Alabama 35898-5020  
(205) 842-0561

#### PUBLIC INFORMATION

A public information repository has been established for public access to the data and reports regarding site investigations, studies, and other activities conducted under the RSA IRP.

*If you did not receive this fact sheet in the mail and would like to be placed on a mailing list to receive future notices regarding the IRP activities, complete this form and mail to the above address.*

#### REQUEST FOR INCLUSION ON THE MAILING LIST FOR REDSTONE ARSENAL IRP

Please print your mailing address here and return to the MICOM Public Affairs Office at Redstone Arsenal. You will receive notice of public meetings or environmental program status as it becomes available.

Name \_\_\_\_\_  
Affiliation \_\_\_\_\_  
Address \_\_\_\_\_  
City \_\_\_\_\_ State \_\_\_\_\_ Zip Code \_\_\_\_\_

Telephone(optional) \_\_\_\_\_  
My primary interests/concerns are: \_\_\_\_\_

*Prepared for the U.S. Army Corps of Engineers, Savannah District, and Redstone Arsenal.*



# Redstone Arsenal

MADISON COUNTY, ALABAMA



OCTOBER 1994

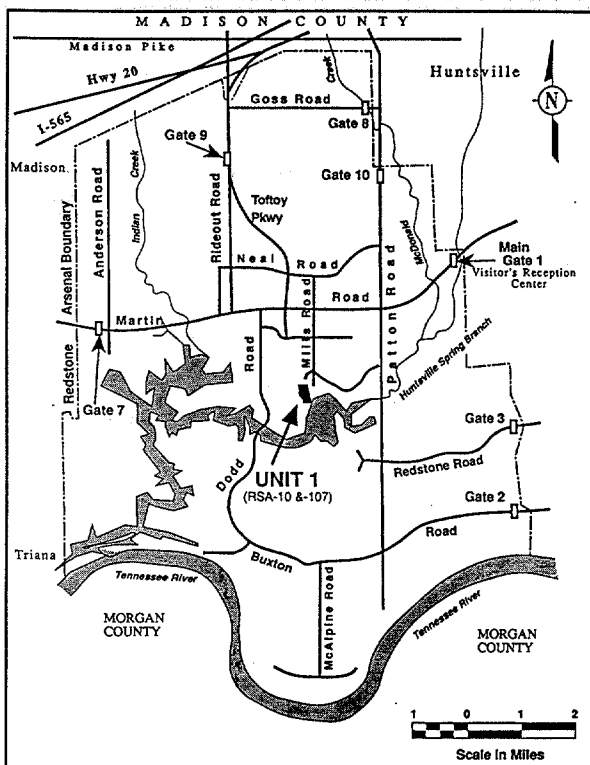
INSTALLATION RESTORATION PROGRAM  
FACT SHEET No. 5

CORRECTIVE MEASURES  
AT RSA-10

*This fact sheet is part of a series designed to inform residents and local officials of the Army's ongoing installation restoration program (IRP) at particular sites.*

## INTRODUCTION

This fact sheet addresses the interim corrective measure (ICM) and related activities at Unit 1, solid waste management unit (SWMU) RSA-10. RSA-10 is a former sanitary landfill and currently serves as a landfill for construction/demolition debris.



The air stripper will then remove many of the contaminants from the groundwater passing through this system. These contaminants include chlorinated hydrocarbons: benzene, toluene, ethylene and xylene. Air stripping allows these volatile organic compounds (VOCs) to be released from the water and dissipate into the air. After passing through the air stripper, any metals and pesticides in the water will attach themselves to the carbon (charcoal) particles in the liquid phase carbon adsorption unit. The water will then be released to a permitted discharge point.

## TEST WELL INSTALLATION AT RSA-10

Because of the complex hydrogeology of the limestone bedrock beneath the site, it currently is very difficult to predict if the extraction wells proposed in the draft ICM design will penetrate a productive zone (a space created by a fracture in the bedrock), and if the aquifer will yield the predicted flows and contaminant concentrations.

The additional data needed to complete the design will be collected during a field effort. The scope of the field program basically involves the installation of the extraction wells proposed for the ICM design, and the subsequent collection of chemical and physical data from those wells. The physical data that will be obtained from the drilling and testing effort includes:

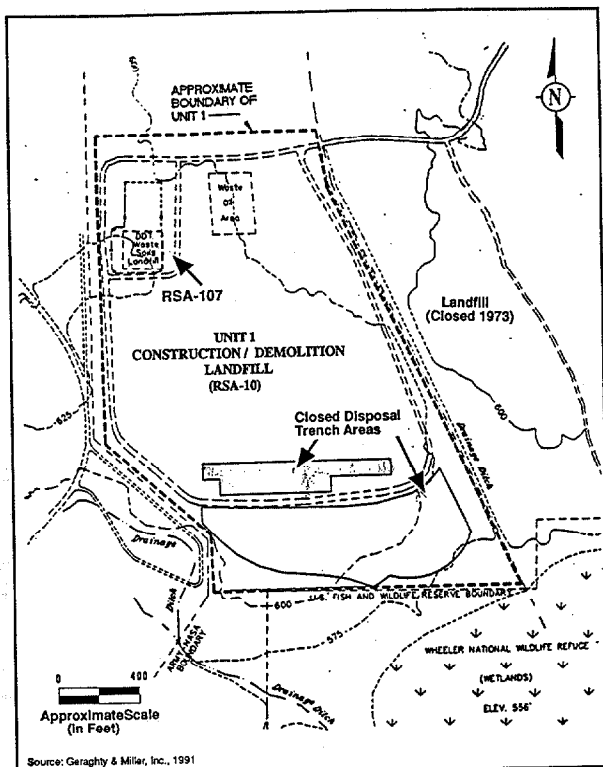
- Sediment and bedrock characteristics to allow for optimum well screen design
- Aquifer hydraulics data to be used to project horizontal and vertical zones of capture and to project the quantity of water to be remediated.
- Groundwater quality data to be used to project future treatment requirements.

## RECENT SITE DEVELOPMENTS AT RSA-10

The ICM design is currently being prepared to provide immediate treatment of contaminated groundwater at the landfill using an air stripper followed by liquid phase carbon adsorption. Extraction wells will first be installed to remove the contaminated groundwater beneath this landfill.

Chemical analyses of extracted groundwater obtained during the field program will provide data necessary to sufficiently characterize the groundwater contamination at the RSA-10 site. In particular, water quality parameters such as total suspended solids and concentrations of iron, metals and organics detected in previous investigations are needed to determine the magnitude of pretreatment required for the ICM system.

At the conclusion of the field program, a technical report will be prepared which contains the results, conclusions and recommendations for completion of the ICM design.



Further studies will be performed to develop the Feasibility Study (FS) and to prepare a proposed plan for final remediation for agency and public review.

#### REQUEST FOR INCLUSION ON THE MAILING LIST FOR REDSTONE ARSENAL IRP

*I would like to be added to the mailing list to receive future notices of public meetings or environmental program status as it becomes available from the MICOM Public Affairs Office at Redstone Arsenal.*

Name/ Affiliation \_\_\_\_\_

Telephone(optional) \_\_\_\_\_  
My primary interests/concerns are: \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_ Zip \_\_\_\_\_

*Prepared for the U.S. Army Corps of Engineers, Savannah District, and Redstone Arsenal.*

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Public Affairs Office  
U.S. Army Missile Command  
Redstone Arsenal, Alabama 35898-5020  
(205) 842-0561

## ABBREVIATIONS AND ACRONYMS

ADEM	Alabama Department of Environmental Management
AMC	U.S. Army Materiel Command
ATSDR	Agency for Toxic Substances and Disease Registry
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act of 1983, as amended (also know as Superfund)
CMS	Corrective Measure Study, RCRA
CRP	Community Relations Program
DDT	Dichloro-diphenyl-trichloroethane (insecticide)
DERP	Defense Environmental Restoration Program
EPA	U.S. Environmental Protection Agency
ESE	Environmental Science & Engineering, Incorporated
FS	Feasibility Study
G&M	Geraghty & Miller, Inc.
IAG	Interagency Agreement
ICM	Interim Corrective Measure
IRA	Interim Remedial Action
IRP	Installation Restoration Program, DERP
MCL	Maximum Concentration Limits
MICOM	U.S. Army Missile Command, AMC
NASA	National Aeronautics and Space Administration
NOV	Notice of Violation
NPL	National Priorities List, CERCLA
PAH	polynuclear aromatic hydrocarbons
PELA	P. E. Lamoreaux and Associates
PIRP	Public Involvement and Response Plan
ppb	parts per billion
ppm	parts per million
RCRA	Resource Conservation and Recovery Act of 1976
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
RSA	Redstone Arsenal
SWMU	Solid waste management unit
TRC	Technical Review Committee
USACE	U.S. Army Corps of Engineers
USAEHA	U.S. Army Environmental Hygiene Agency